NOTES ON *MEGARHYSSA LUNATOR*

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For several years I have had the opportunity to observe rather closely the activities of *Megarhyssa lunator,* and have discovered some curious, and apparently hitherto unknown peculiarities of behavior.

Emergence of Adult Insect

In view of the fact that the adult virgin female is found in a burrow opening just beneath the bark, as well as from the fact that this burrow must be enlarged to permit emergence, it seems likely that the larval Megarhyssa pupates near the surface of the tree. The insect is enabled to escape by biting bits of wood from the walls of her prison. In all observed cases the overlaying bark had been removed by the observer. No doubt the insect is capable of gnawing through the bark; at least a virgin female imprisoned in a cloth sack in an effort to attract males chewed her way to freedom.

The emerging female is much disturbed by suitors, which, having gathered in numbers about her burrow, insert their abdomens into the opening. In some cases a male becomes so firmly wedged into this opening, clinging meanwhile with his claws to the bark, that he is removed with difficulty by the observer.

The details concerning emergence of the males have not been observed. The openings from which they leave the tree have an average diameter of 2.27 mm., those of the females 4.30 mm.

After enlarging the opening of the burrow the female insect rests for a few seconds. She then crawls out onto the surface of the tree.

Mating

In spite of the ardor of the male insects (see Riley, 1888)

there is no mad rush for union with the female. Sometimes there is a mild contest between two or three individuals; more often only one male reaches the female. He rests upon the back of her abdomen which he clasps with his legs. He then flexes his abdomen ventrally, forming thereby a flat spiral. In this position the extreme tip of his abdomen, in an inverted position, is directed toward the corresponding free or caudal end of the female abdomen. The penis, the median of the three terminal appendages of the male (the others are claspers) thus enters the genital opening of his mate in a posterior direction; a condition made necessary by the peculiar fact that the female genitalia open anteriorly.

Mating requries only a few seconds: at the end of that time the female dislodges her mate by backward thrusts of her posterior legs.

It does not seem likely that the female Megarhyssa ever again requires the attentions of a mate. Males ignore all but emerging, and hence virgin, females. Moreover, since the female possesses a definite spermatheca, it is probable that she, like other Hymenoptera, carries with her the sperm necessary for the fertilization of eggs.

Oviposition

In spite of the generally accepted conclusion that Megarhyssa deposites her eggs by *drilling* through solid wood, my own observatons contradict this claim. Of literally hundreds of ovipositing females observed, not *one* could be said to drill in the true sense of the word. In cases where this appeared to be true a judicious prying off of the overlaying bark revealed that the ovipositor had penetrated a crack in this same bark and entered the end of an open burrow. Where bark had already been stripped from the tree, individuals were often seen inserting the ovipositor directly into an open burrow.

It is of course possible that the female Megrahyssa may drill through the bark to a burrow. It is also possible that individuals may take advantage of openings made by an ovipositing Tremex. As long ago as 1794 Marsham observed this kind of behavior on the part of *Ichneumon manifestor*.

We may conclude from this that Megarhyssa is not as well equipped with wonderfully mysterious instincts for prey as some students would have us believe. In fact I once found this insect ovipositing in the burrow of a Buprestid!

Trees Attacked

Naturally Megarhyssa lives in trees most abundantly supplied with specimens of Tremex. In this region these seem to be almost exclusively soft maples (Acer saccharinum). The only other trees troubled to any extent are elms. The maples, probably because of the softness of the wood, are especially susceptible to insect attacks.

Literature Cited

Marsham, T. 1794. Observations on the economy of *Ichneumon manifestor*. Linn. Soc., Trans., 3.

Riley, C. V. 1888. Habits of Thalessa and Tremex. Insect Life, 1.